Teensy 3.1 Synthesizer Features

- MIDI Plug and Play USB Device
- Intelligent “Last Note” Pull Off: (Keeps track of the order notes are held down and always defaults to the most recently played note.)
- Glide/Portamento Legato: When a note is played while another note is held down, the pitch will glide to the new note. (Pitch will also glide linearly with respect to musical notes, not frequency.) With adjustable glide speed.
- Pitch Bend, mapped linearly with respect to musical notes, not frequency. Adjustable pitch bend range, from +/-1 semitone to +/-12 semitones (1 octave).
- Arpeggiator with adjustable speed. Ability to switch arpeggiator on and off while playing without affecting the intelligent pull off.
- 5 monophonic modes. PWM based oscillator, square wave oscillator, two pulse oscillators, and one analog oscillator.
- Vibrato on square wave oscillator.
- PWM based decay on PWM oscillator and both pulse oscillators.
- Adjustable duty cycle controls for both pulse oscillators.
- PWM frequency follower on PWM oscillator.
- Polynomial waveform on square wave oscillator.
- Drum Samples (8 Bit, 8ks/s) with variable sample rate.
- 8 bit waveform mode, with 12 waveforms.
    1. 50% Duty Cycle Pulse (Square Wave)
    2. 37.5% Duty Cycle Pulse
    3. 25% Duty Cycle Pulse
    4. 12.5% Duty Cycle Pulse
    5. 2 Bit GameBoy Triangle with hiccup
    6. 2 Bit Saw
    7. 3 Bit Triangle
    8. 1 Bit Atari Polypulse
    9. 1 Bit Even Polypulse
    10. 1 Bit Even Polypulse (Extra Harmonics)
    11. 2 Bit Even Polypulse
    12. 8 Bit Nintendo Polynomial
- Onboard LED shows MIDI commands received (excluding note-off commands).

Teensy 3.1 Synthesizer Channel / CC Guide

CH	1	2	3	4	5	6
	PWM Oscillator (Pin 6)	Square Wave Oscillator (Pin 9)	25% Duty Cycle Pulse (Pin 10)	12.5% Duty Cycle Pulse (Pin 20)	Drum Samples (Pin A14)	Waveform Oscillator (Pin A14)
CC #						
1	PWM Duty Cycle	Vibrato	Duty Cycle	Duty Cycle	Sample Rate Normal → Slower	Vibrato
2	Global Bend Range					
3	Decay	Vibrato Type: Sine/Triangle	Decay	Decay	N/A	Vibrato Type: Sine/Triangle
4	Arpeggiator On/Off	Arpeggiator On/Off	Arpeggiator On/Off	Arpeggiator On/Off	N/A	Arpeggiator On/Off
5	Arpeggiator Speed	Arpeggiator Speed	Arpeggiator Speed	Arpeggiator Speed	N/A	Arpeggiator Speed
6	PWM Follower	Polynomial Mode	Duty Cycle Range	Duty Cycle Range	N/A	Waveform Selection
20	Portamento Speed	Portamento Speed	Portamento Speed	Portamento Speed	N/A	Portamento Speed
Pitch Bend	Pitch Bend	Pitch Bend	Pitch Bend	Pitch Bend	Sample Rate Normal → Faster	Pitch Bend